

WHAT IS CLAIMED IS:

Claim 1.

A trunnion assembly for mounting a launching device comprising:

a barrel for launching a liquid or a solid;

a horizontal locating assembly to allow for limited horizontal movement of the the launching device; and a vertical locating assembly for varying the inclination of the launching device.

Claim 2. A trunnion assembly according to claim 1 including means for varying the extent of horizontal movement of said trunnion assembly.

Claim 3. A trunnion assembly according to claim 2 wherein said means for varying the extent of horizontal movement of said trunnion assembly comprise at least one movable stop assembly.

Claim 4. A trunnion assembly according to claim 3 wherein said means for varying the extent of vertical movement of said trunnion assembly comprise at least one stop assembly.

Claim 5. A trunnion assembly according to claim 4 wherein said means for varying the extent of horizontal movement of said trunnion assembly comprise at least one resilient movable stop assembly.

Claim 6. A trunnion assembly according to claim 5 wherein said means for varying the extent of vertical movement of said trunnion assembly comprise at least one resilient stop assembly.

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Claim ²⁸ 7. A trunnion assembly according to claim ²⁶ 6 wherein
said means for varying the extent of ^{horizontal} movement of
said trunnion assembly comprise at least a pair of resilient
movable stop assemblies ^{mounted on a base plate}.

Claim ²⁹ 8. A trunnion assembly according to claim ²⁸ 7 wherein
said means for varying the extent of vertical movement of
said trunnion assembly comprise at least a pair of resilient
stop assemblies.

Claim ³⁰ 9. A trunnion assembly according to claim ²⁹ 8 wherein
said ^{at least a} pair of resilient stop assemblies ^{are} made of elastomeric
material having an A Scale Durometer value of about 60 to
100.

Claim ³¹ 10. A trunnion assembly according to claim ³⁰ 9 wherein
said ^{at least a} pair of resilient movable stop assemblies include
stop plates and resilient bumpers.

Claim ³² 11. A trunnion assembly according to claim ³¹ 10 wherein
said resilient bumpers are mounted on said stop plates. ~~and~~

Claim ³³ 12. A trunnion assembly according to claim ³² 11 wherein
said resilient bumpers and said stop plates include
openings ^{and} ^{located in said openings} to receive removable fasteners.

Claim ³⁴ 13. A trunnion assembly according to claim ³³ 12 wherein
said fasteners are formed ^{integral} with said ^{bumpers} bumper. ~~the~~

Claim ³⁵ 14. A trunnion assembly according to claim 12 wherein
said resilient bumpers are threaded to receive said
fastener.

Claim ³⁶ 15. A trunnion assembly according to claim ³⁸ 14 wherein
~~said~~ the extent of horizontal rotation can be varied through

selected placement of said stop assemblies on said base plate.

a Claim ³⁷~~26~~. A trunnion assembly according to claim ²⁶~~26~~ wherein said means for varying the extent of vertical movement of said trunnion assembly comprise at least one resilient stop assembly located within a cylindrical casing.

a Claim ³⁸~~27~~. A trunnion assembly according to claim ³⁷~~16~~ wherein said resilient stop assembly ^{comprises} a pair of cylindrical dogs, each having ^{respective} cutaway portions located within said casing and being movable on a shaft having a head located outside of said casing.

Claim ³⁹~~28~~. A trunnion assembly according to claim ³⁸~~17~~ wherein semi-cylindrical floating stops are located within said respective cutaway portions such that clearance exists between said floating stops and said dogs.

Claim ⁴⁰~~29~~. A trunnion assembly according to claim ³⁹~~18~~ wherein said floating stops are made of elastomeric resilient material.

a Claim ⁴¹~~30~~. A trunnion assembly according to claim ⁴⁰~~19~~ wherein said elastomeric resilient material has a Durometer value of 60 to 100, A Scale.

a Claim ⁴²~~31~~. A trunnion assembly according to claim ⁴¹~~20~~ wherein said head is located within a barrel extension extending outwardly from said barrel and removable fastening means are provided to render said shaft movable with said barrel about a horizontal axis.

a Claim ⁴³~~22~~. A trunnion assembly according to claim ⁴²~~21~~ wherein said resilient stop assembly extends within ~~within~~ a horizontal stand portion and said barrel extension.

10 Claim ⁴⁴~~23~~. A trunnion assembly according to claim ⁴³~~22~~ wherein a sleeve is located within said casing and means are provided to vary the extent of ^{vertical}~~vertical~~ movement about said horizontal axis.

19 Claim ⁴⁵~~24~~. A trunnion assembly according to claim ⁴⁴~~23~~ wherein said means to vary the extent of ^{vertical}~~vertical~~ movement about said horizontal axis comprises a sleeve having elongated openings to receive removable fasteners to allow limited adjustability of the extent of vertical travel of said barrel about said horizontal axis.

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Claim 25.

A launching device comprising:

an accumulator located below a barrel assembly;

said barrel assembly mounted on a trunnion;

said barrel ^{assembly} including means for launching a ^{substance selected from} liquid, or solid, ^{and mixtures} ~~substance~~ thereof;

said trunnion including a horizontal locating assembly to allow for limited horizontal movement of the ~~the~~ launching device; and a

vertical ^{rod} locating assembly for varying the inclination of said barrel assembly;

said barrel assembly in fluid communication with said accumulator;

conduit means for supplying liquid to said accumulator;

first ~~valve~~ ^{assembly} ^{in said conduit means} means is in fluid communication with said accumulator;

control means for controlling said first valve means;

to control opening and closing of ^{said} ~~said~~ first valve ^{assembly} means,

and in open position allowing fluid to pass from said

accumulator into said barrel assembly, and to be discharged from ^{barrel} ~~barrel~~ assembly.

Claim 26. A launching device according to claim 25 wherein said ~~valve~~ ^{first valve assembly} means includes a solenoid valve.

Claim 27. A launching device according to claim 25 wherein said ~~valve~~ ^{first valve assembly} means includes a second on and off valve.

Claim 28. A launching device according to claim 25 wherein said launching device includes a ^{trunnion} ~~trunnion~~ assembly including

a curved stand having a vertical portion, a curved portion and a horizontal portion.

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Claim ⁵~~29~~. A launching device according to claim ⁴~~28~~ wherein said vertical portion includes a ~~a~~ lower end ^{portion} which extends into a bearing assembly.

Claim ⁶~~30~~. A launching device according to claim ⁵~~29~~ wherein said bearing assembly includes a cylindrical enclosure which receives a cylindrical bearing which is connected to said end portion with removable fastening means.

Claim ⁷~~31~~. A launching device according to claim ⁶~~30~~ wherein said end portion ~~44~~ extends below a mounting plate.

Claim ⁸~~32~~. A launching device according to claim ⁷~~31~~ wherein horizontal locating assembly is mounted on said ^{mounting} ~~base~~ plate.

Claim ⁹~~33~~. A launching device according to claim ⁷~~31~~ wherein said ^{lower} horizontal locating assembly includes ^{at least one} lug means mounted on said end portion with removable fasteners.

Claim ¹⁰~~34~~. A launching device according to claim ⁹~~33~~ wherein said ^{at least one} lug means includes a cylindrical stop ring having an outwardly extending lug integrally connected thereto.

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Claim ¹¹~~35~~. A launching device according to claim ⁹~~33~~ wherein said ^{lug} ~~lug~~ means engage stop assemblies to determine ^{at least one} horizontal movement.

Claim ¹²~~36~~. A launching device according to claim ¹¹~~35~~ wherein said stop assemblies include horizontal stop plates upon which stops are mounted vertically.

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Claim 37. A launching device according to claim 36, wherein resilient bumpers made of elastomeric material are mounted on said stops.

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Claim 38. A launching device according to claim 37 wherein said elastomeric material has a Durometer value of about 60 to 100, A Scale.

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Claim 39. A launching device according to claim 37 wherein fasteners extend through openings in said stops, and through openings in said resilient bumpers.

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first means
said valve assembly is connected to a flexible conduit means including a first fluid containing conduit into said lower station end portion, through said stand, through stand horizontal portion and into said barrel assembly.

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Claim 41. A launching device according to claim 40 wherein second flexible conduit carrying electrical wires is also fed into said lower station end portion, through said stand, through said stand horizontal portion and into said barrel assembly.

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fluid containing
Claim 42. A launching device according to claim 41 wherein said first flexible conduit extends through a barrel to a second end of the barrel, which houses a liquid orifice assembly.

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Claim 43. A launching device according to claim 42 wherein said second flexible conduit extends through a barrel to a first barrel end to a light assembly to light the liquid

^{carried}
carried into said orifice assembly and is discharged
therefrom.

Claim ²⁴19. A launching device according to claim ⁴³18 wherein
said light assembly includes an electrical switch connected
to said electrical wires, a light bulb, a lens and a
discharge activating ^{button}bottom.

Claim ⁴⁵20. A launching device according to claim ⁴³18 wherein
said orifice assembly includes a discharge orifice.

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Claim 47. A vertical locating assembly for varying the inclination of a launching device comprising:

at least one resilient stop assembly located within a cylindrical casing;

said resilient stop assembly including a pair of cylindrical dogs, each having ^{respective} cutaway portions located within said casing and being movable on a shaft having a head located outside of said casing;

semi-cylindrical floating stops located within ^{said} respective cutaway portions such that clearance exists between said floating stops and said dogs.

Claim 48. A vertical locating assembly according to claim 47 wherein said floating stops are made of elastomeric resilient material.

Claim 49. A vertical locating assembly according to claim 47 wherein said elastomeric resilient material has a Durometer value of about 60 to 100, A Scale.

Claim 50. A vertical locating assembly according to claim 48 wherein said head is located within a barrel extension extending outwardly from a launching barrel and removable fastening means are provided to render said shaft movable with said barrel about a horizontal axis.

Claim 51. A vertical locating assembly according to claim 49 wherein said resilient stop assembly extends within ~~within~~ a horizontal stand portion which supports said barrel.

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